

**REMARKS**

**I. STATUS OF THE CLAIMS**

Claim 3 has been cancelled. Claims 24 and 25 have been withdrawn. Claims 1, 2, and 19 have been amended. Claims 1, 2, and 4-23 remain for reconsideration. No new matter is introduced by the amendment.

**II. RESPONSE TO RESTRICTION REQUIREMENT**

The Examiner gives the following two-way restriction:

- (I) Claims 1-23, drawn to a process to polymerize an olefin; and
- (II) Claims 24 and 25, drawn to an UHMWPE.

Applicant had previously selected Group I with traverse. After reviewing the Examiner's reasoning in the Office Action, Applicant is satisfied with the restriction requirement, and therefore Applicant has withdrawn claims 24 and 25 in this response.

**III. RESPONSE TO CLAIM OBJECTION**

The Examiner objects to claim 19 for the citation "the supported catalyst of step (a), a clay, and a non-alumoxane activator," which, the Examiner believes, is unclear. Applicant has amended claim 19 in this response.

Note that Applicant keeps the term "a supported transition metal complex" in claim 19 because the transition metal complex is not necessarily supported onto the clay. Rather, the clay is added into the polymerization system independently from the supported transition metal complex.

**IV. RESPONSE TO ANTICIPATION REJECTION OF CLAIMS 1 and 6-23**

The Examiner rejects claims 1 and 6-23 under 35 U.S.C. § 102(b) as being anticipated by Ozawa (JP 2001-253909). As the examiner recognizes, original claim 3, which directs the transition metal of claim 1 to a Group 4 metal, is not anticipated by Ozawa because the reference teaching is limited to a late transition

metal. Applicant has incorporated original claim 3 into claim 1 and cancelled claim 3. Thus, amended claim 1 and its dependent claims 6-23 are no longer anticipated by Ozawa.

## **V. RESPONSE TO OBVIOUSNESS REJECTION OF CLAIMS 1-23**

The Examiner rejects claims 1-23 under 35 U.S.C. § 103(a) as being obvious over Nagy (US 5,637,660). Note that claim 3 has been cancelled and claims 1, 2, and 19 have been amended in this response. Applicant respectfully traverses the obviousness rejection of remaining claims 1, 2, and 4-23 for the reason that follows.

The Examiner says that the difference between the claims and Nagy is the requirement of clay as a support used in the present invention. Applicant respectfully notes that the Examiner's statement is partially incorrect. The Examiner is right in the aspect that the claims require the use of clay while Nagy fails to teach or suggest the use of clay. The Examiner is incorrect in that the claimed use of clay is not necessarily as support for the transition metal complex. Rather, Applicant uses clay as an agent for the polymerization independently from the complex. This is well illustrated by Example 1 of the specification. In Example 1, the transition metal complex is supported onto silica and the silica supported complex is added into the reactor along with clay.

Nevertheless, the claims are not obvious over Nagy because, as the Examiner recognizes, the use of clay is missing all together from Nagy. MPEP §2143.03 provides that "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Lacking teaching or suggestion of the use of clay renders Nagy defective under MPEP §2143.03.

Still, the Examiner cites *Ponasik, Jr. et al.* However, *Ponasik, Jr. et al.* cannot provide any remedy for the Nagy defect. As the Examiner recognizes, *Ponasik, Jr. et al.* teaches the use of clay to support a transition metal complex,

but it does not teach or suggest the use of clay as an agent in the polymerization process. Thus, a *prima facie* case of obviousness cannot be established based on the combined teachings of Nagy and Ponasik, Jr. *et al.* under MPEP §2142 which requires the combined references teach every element of the claims.

Even if the Examiner could reasonably establish a *prima facie* case of obviousness against Applicant's claims, Applicant has provided ample evidence in the specification to overcome the obviousness. For the convenience of the Examiner's review, Applicant reproduces here Table 1 of page 13 from the original specification. The results in Table 1 show that when clay is added to the polymerization system, the catalyst activity increases significantly. Also, the results in Table 1 show that the use of clay increases the bulk density of the resultant polyethylene. These advantages are nowhere suggested by Nagy, Ponasik, Jr. *et al.*, or any combination thereof.

**TABLE 1**  
**Results Summary**

Ex. No.	Clay	Polym. Temp. °C	Ethylene Pressure psig	Solvent	Catalyst Activity Kg PE/mol cat/h	Mw x 10 <sup>6</sup>	Bulk Density g/cc
1	yes	70	550	Hexane	33,100	5.25	0.32
2	yes	70	550	Hexane	27,300	5.14	0.32
3	yes	70	550	Hexane	16,500	5.08	0.31
C4	no	70	550	Hexane	9,600	4.04	0.26
5	yes	70	300	Isobutane	10,000	4.97	0.31
6	yes	70	300	Isobutane	9,000	4.87	0.30
C7	no	70	300	Isobutane	7,800	3.99	0.26

In conclusion, remaining claims 1, 2, and 4-23 are neither anticipated nor made obvious by the cited references. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejections and allow claims 1, 2, and 4-23. Please call Applicant's attorney, Mr. Shao-Hua Guo, if any further discussion of the application might be helpful.

Respectfully submitted,  
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